



County of San Diego



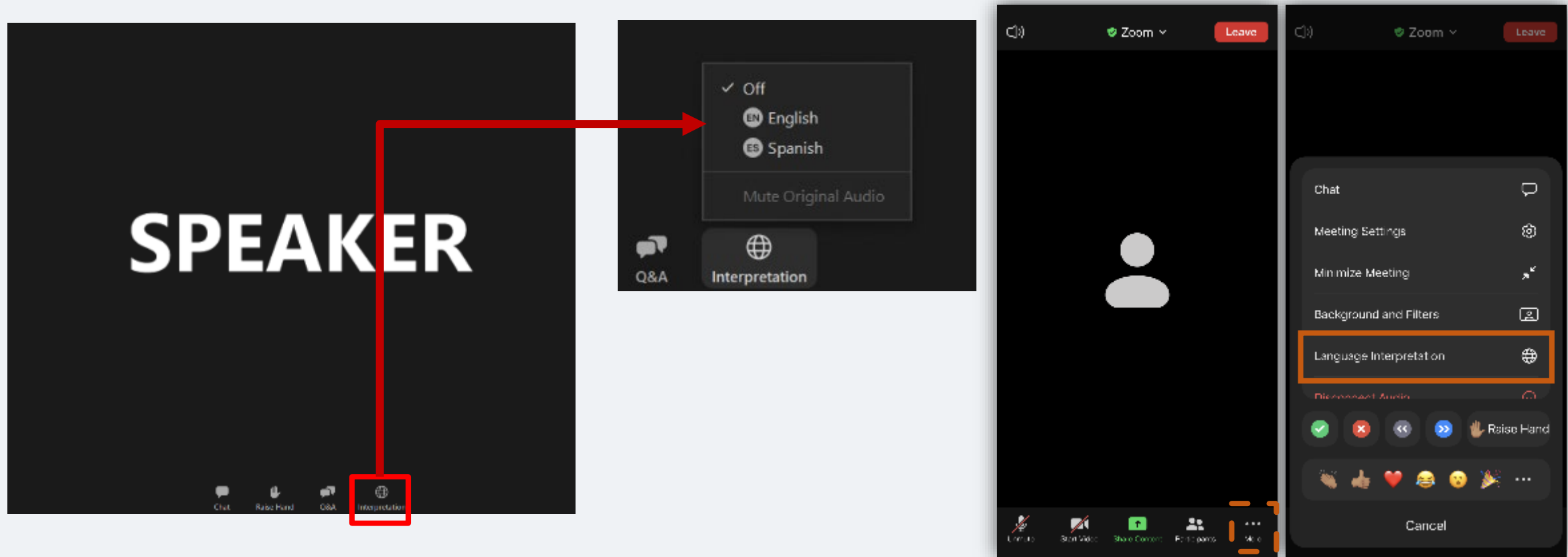
GETTING TO
ZERO

SAN DIEGO COUNTY
REGIONAL DECARBONIZATION FRAMEWORK

Buildings Working Group

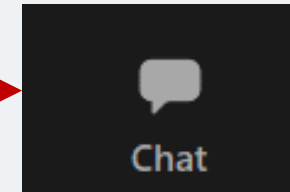
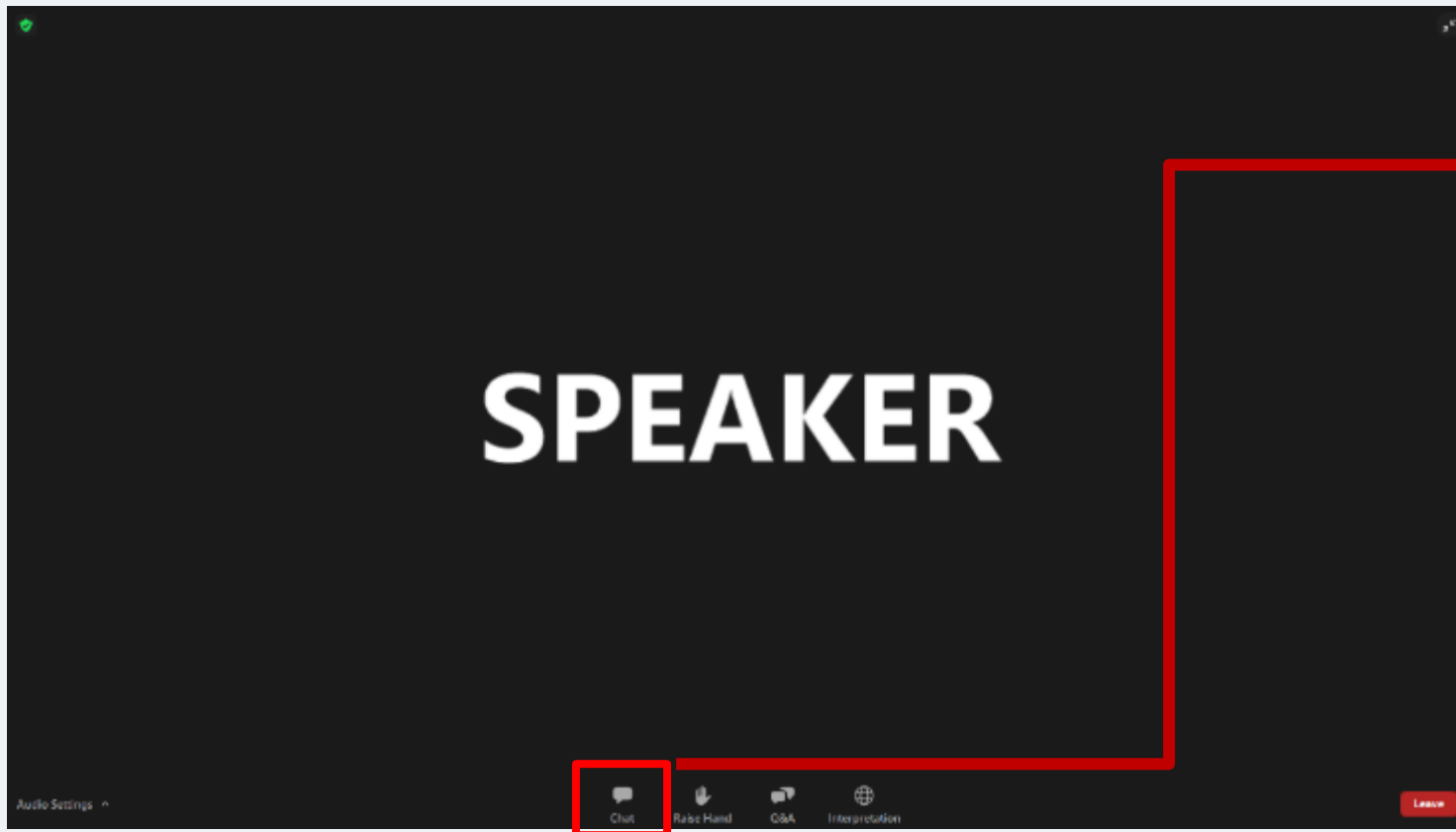
September 29, 2022

How to use Zoom // *Cómo Usar Zoom*



Please select your language of choice (you must select one option)
Debe seleccionar el idioma de su preferencia (Tiene que escoger un idioma)

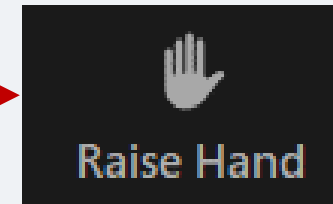
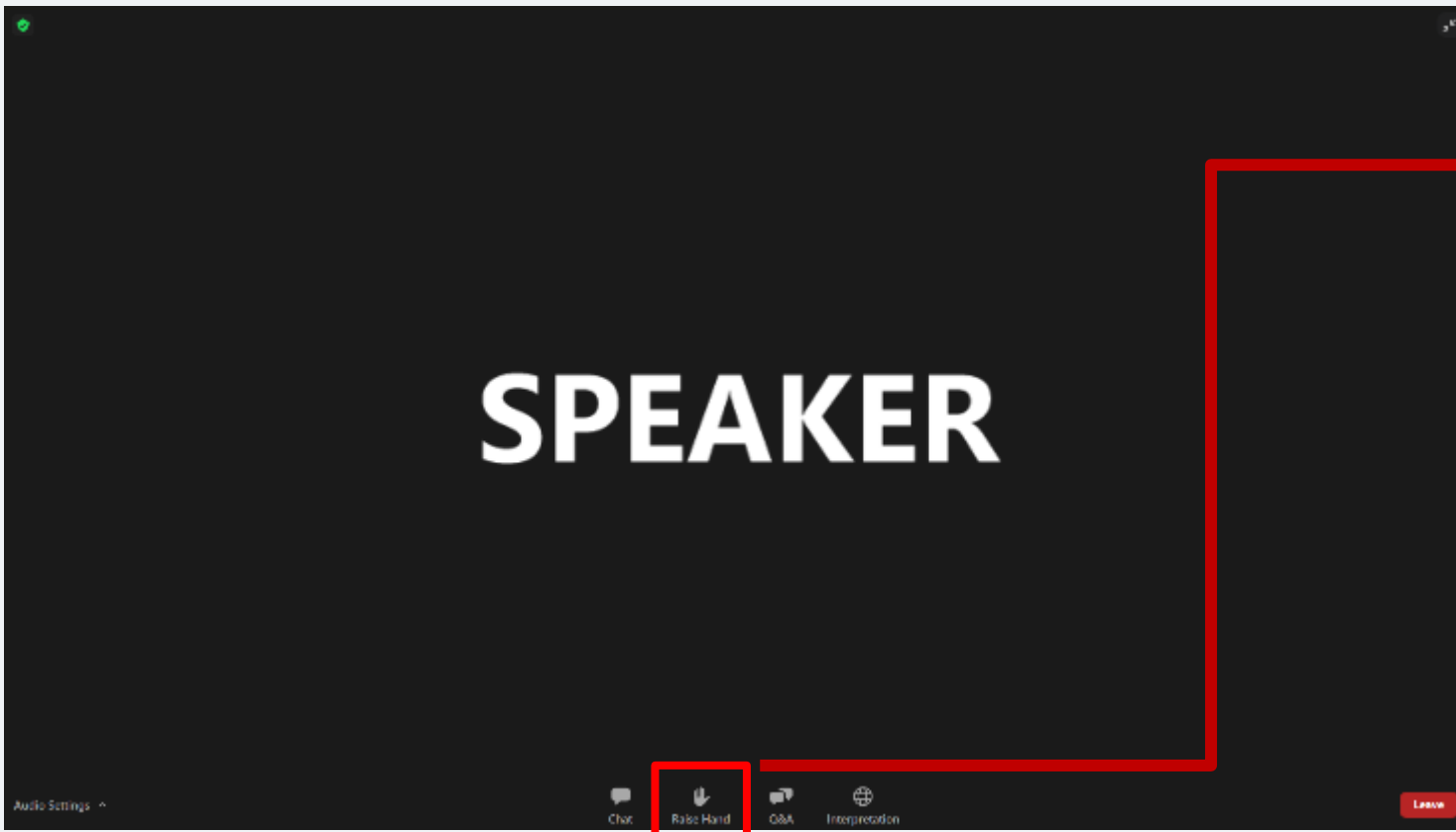
How to use Zoom // *Cómo Usar Zoom*



Comments and questions can be submitted through the chat window.

Los comentarios y las preguntas se pueden enviar a través de la ventana de chat.

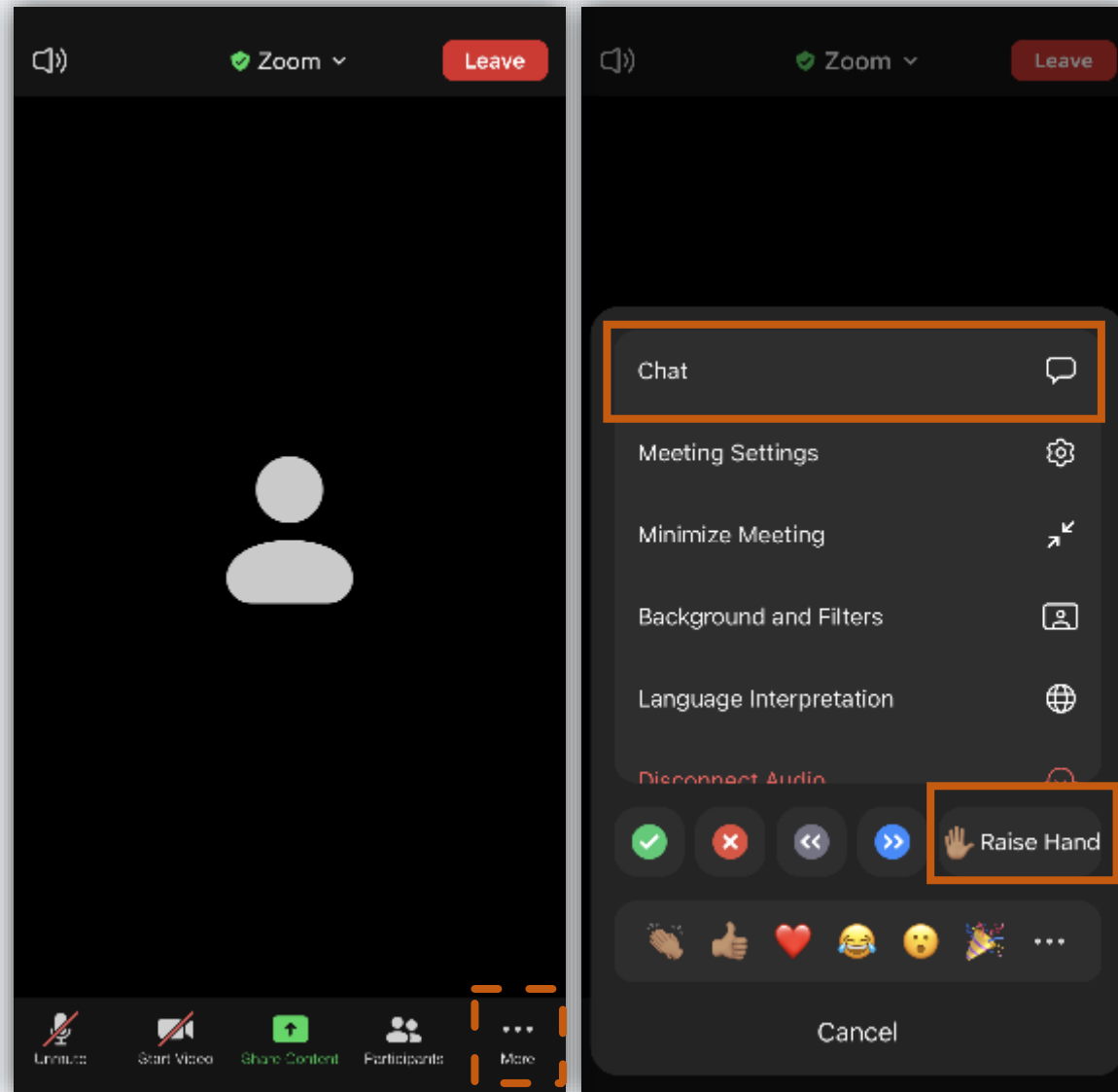
How to use Zoom // *Cómo Usar Zoom*



During the discussion, if you would like to speak over the audio, please raise your hand (otherwise questions and comments can be submitted through the Chat window)

Durante el debate, si desea participar de manera oral, por favor, levante la mano (de lo contrario, las preguntas y comentarios pueden presentarse a través de la ventana de Chat)

On your Phone // *En su teléfono móvil*





Role of Working Groups



BUILDINGS



ELECTRICITY



**FOOD SYSTEMS &
CIRCULAR ECONOMY**



**LAND USE & NATURAL
CLIMATE SOLUTIONS**

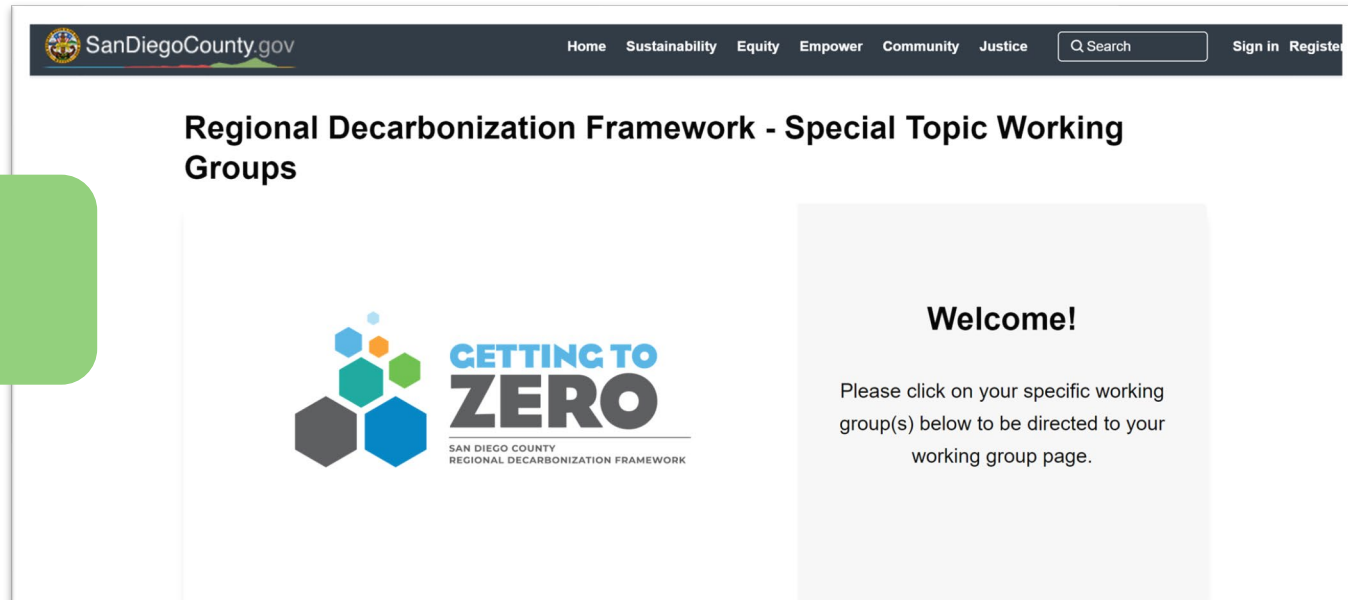


TRANSPORTATION

Engagement Portal

- Special Topic Working Group Engagement Portal:
<https://engage.sandiegocounty.gov/hub-page/working-groups>
 - Central area where all workshop materials, agendas, recordings, notes etc. will be stored.
 - Can also access the working group portal through the RDF engagement site
- Only have access to working groups that you have shown interest in via interest form

Questions/Concerns email us at:
ZeroCarbon@sdcounty.ca.gov



Today's Agenda

- Introduction to the Implementation Playbook (10 minutes)
- Buildings (90 minutes)
 - Regional Emissions (5 minutes)
 - Reduce Energy Use Introduction (5 minutes) and Discussion (20 minutes)
 - Electrify Appliances and Equipment Introduction (5 minutes) and Discussion (20 minutes)
 - Use Low-Carbon Fuels Introduction (5 minutes) and Discussion (20 minutes)
 - Open Discussion on Transportation **Not** Discussed (10 minutes)
- Closing (5 minutes)

Integrated Regional Decarbonization Framework



Technical Report led by
UC San Diego and USD

Completed
August 2022



Workforce Development
Study by Inclusive
Economics

Completed
August 2022

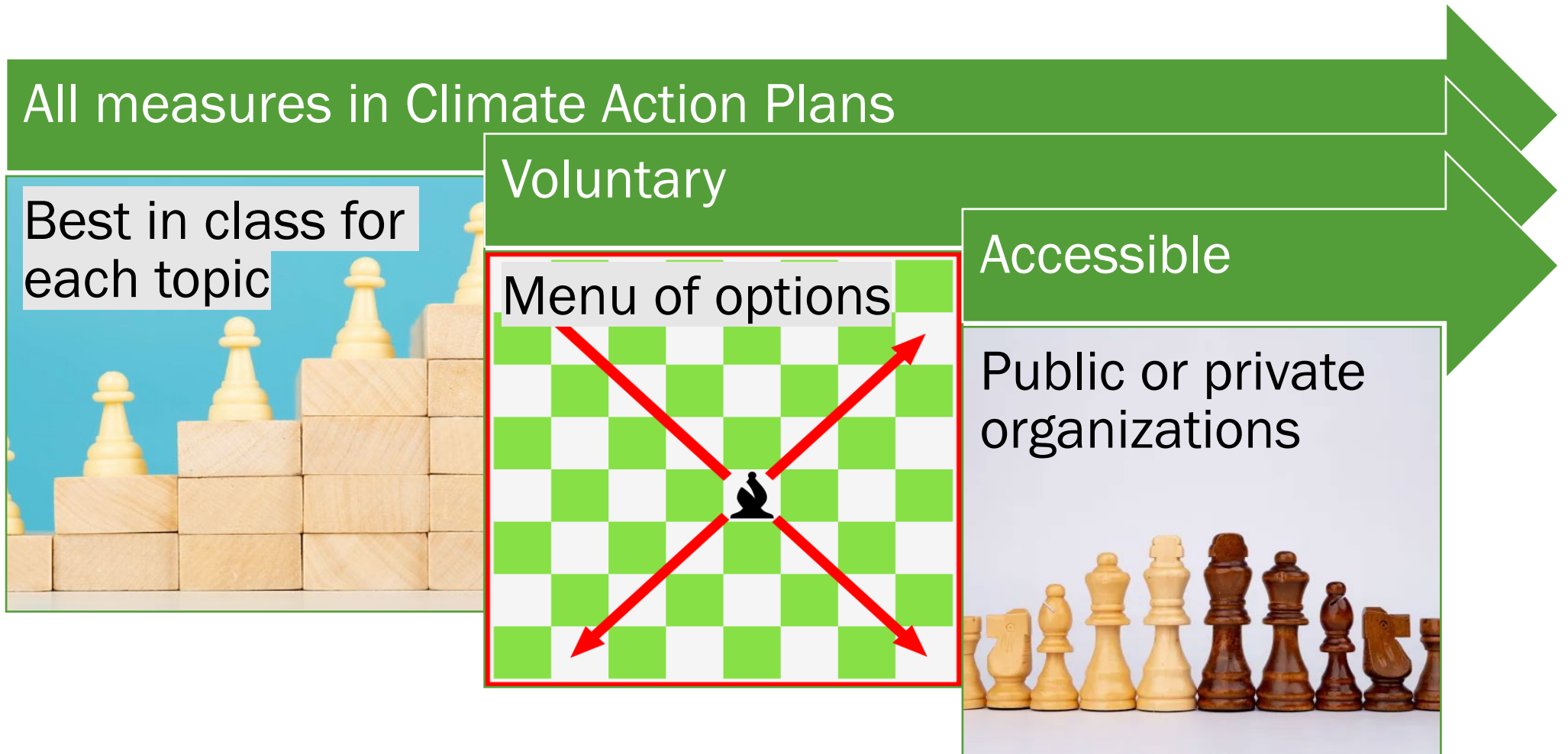


Implementation
Playbook

Draft December 2022
Final by Spring 2023

www.sandiegocounty.gov/RDF

Implementation Playbook



Implementation Playbook: Level of Approach



Organizational
Operations



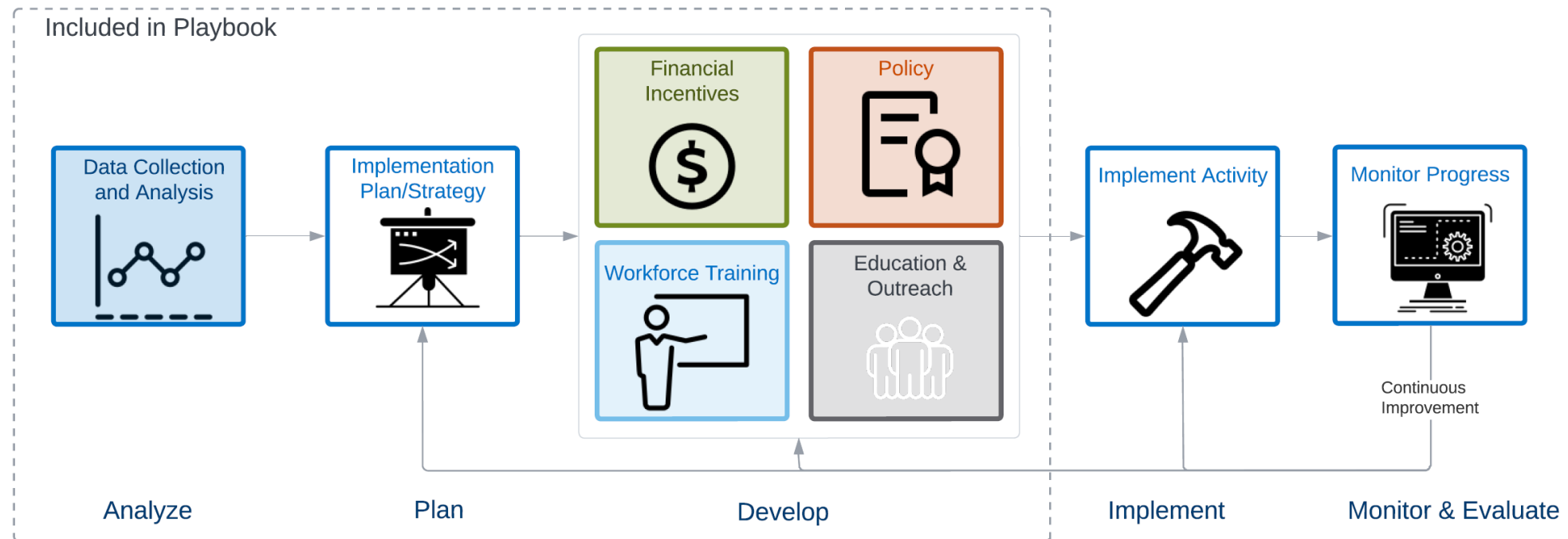
Community



Region

What we are looking for today:

1. In your experience what has worked or not worked in terms of existing policies?
2. What programs could benefit underserved communities or have adverse impacts?
3. What are solutions that are not in the data base?





Buildings

Regional GHG Emissions – Main Sources

On-Road
Transportation



48%

Electricity



20%

Natural Gas



12%

80%

of total GHG emissions
in the San Diego region

Regional GHG Emissions – Other Sources

Industrial Gases



8%

Other Fuels
(e.g., wood, propane)



4%

Off-Road
Transportation



4%

Solid Waste

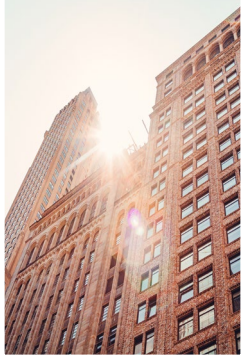


2%

Water, Aviation, Rail, Wastewater,
Agriculture, Marine Vessels, Fertilizers

1% or less each

Buildings – Overall Key Considerations



Building Stock

- 1% of building stock constructed annually
- 80% of buildings that will exist in 2050 already exist today



Holistic vs. Piecemeal Approach

- Efficient air conditioner with low insulation and leaky windows
- Combinations of approaches – efficiency, electrification, rooftop solar, energy storage



Certain Solutions Can Affect Multiple Related Issues

- Financing can support energy efficiency and electrification
- Policies can support new and existing buildings



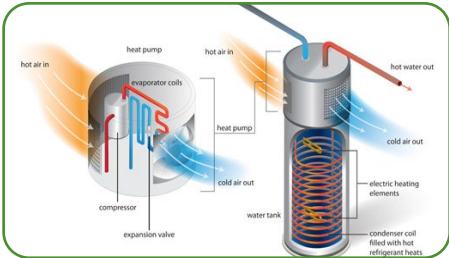
Increasing Number of City Ordinances Related to Building Energy Use

Buildings – GHG Reductions



Reduce Energy Use

- Energy efficiency improvements



Electrify Appliances and Equipment

- Heat pumps for space and water heating



Use Low-Carbon Fuels

- Blending renewable hydrogen with natural gas
- Biomethane captured from landfills, wastewater treatment, agriculture, etc.

Energy Efficiency – Laws and Programs

State Requirements

- Senate Bill 350
 - Goal to double energy efficiency savings by 2030
 - California Public Utilities Commission (CPUC) updated energy efficiency program regulation to help achieve savings target
- Title 24 Building Energy Code
 - 3-year cycle – newest codes take effect 1-1-2023
 - Applies to new buildings, alterations, and additions
- Title 20 Appliance Efficiency Standard
 - Used in combination with federal standards to set minimum standards for appliances



Energy Efficiency – Other Key Considerations

Energy efficiency is often considered first fuel

California has had robust energy efficiency policies and programs since the 1970s

New construction, alterations, and additions covered by Title 24

Existing buildings historically more challenging

Energy Efficiency – Example Actions



Organization

- Conduct audits of facilities to identify opportunities to improve energy efficiency
- Implement energy efficiency projects at facilities and sites (e.g., lighting, HVAC, pumping, etc.)



Community

- Conduct a communitywide analysis of existing buildings
- Adopt an ordinance to require energy performance beyond State code in new buildings



Region

- Develop a regional program to support development of efficiency ordinances

Energy Efficiency Discussion

Electrification – Laws and Programs

State Requirements

- Title 24 Building Energy Code
 - Trend toward electrification, onsite renewable energy generation, and energy storage
- AB 3232
 - Reducing residential and commercial building stock emissions by at least 40% below 1990 levels by 2030
 - Residential/commercial GHG emissions included in integrated energy policy report (IEPR)
- AB 1477
 - Decarbonize by replacing natural gas end-uses through planning, funding, developing, and deploying decarbonized end-use technology (e.g., heat pumps)



Electrification – Other Key Considerations

Cost and equity implications of electrification in buildings

- High costs – upfront and ongoing
- Electric panel upgrades can be necessary

Workforce implications

- Is additional training needed to scale electrification?

Some heat pumps use chemical refrigerants

Efficiency can reduce energy needs of electric appliances/equipment

Electric reliability

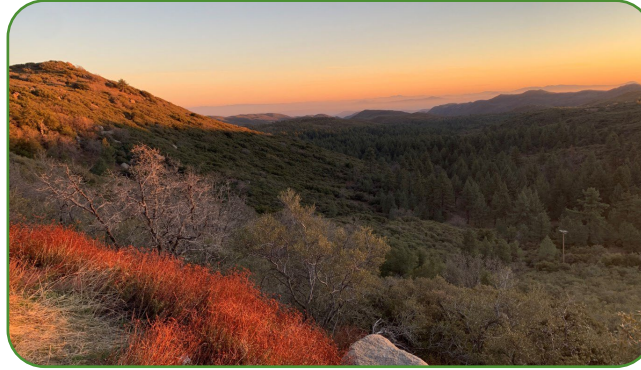
- Need for additional generation capacity and grid flexibility

Electrification – Example Actions



Organization

- Audit facilities to identify opportunities for electrification
- Develop a comprehensive plan to convert appliances and equipment to electric in existing buildings



Community

- Adopt an ordinance to require all-electric new construction
- Develop a program to provide incentives for new, all-electric projects



Region

- Convene a regional task force on electrifying existing buildings
- Conduct regional analysis on building electrification

Electrification Discussion

Low-Carbon Fuels – Laws and Programs

State Law and Regulation

- Senate Bill 1383
 - Reduce methane by 40% below 2013 levels by 2030 and use captured methane
- Senate Bill 1440
 - Requires CPUC to take specified action to set biomethane procurement targets if it is cost-effective and complies with State/federal laws
- Senate Bill 1369
 - Calls for increase of renewable hydrogen for energy storage and end-use



Low-Carbon Fuels – Other Key Considerations

Low supply of low-carbon fuels (e.g., hydrogen or biomethane)

High cost compared to other liquid fuels, low efficiency compared to electricity

Potential solution for hard-to-electrify sectors (e.g., industrial)

Trade off between low-carbon fuels and electrification

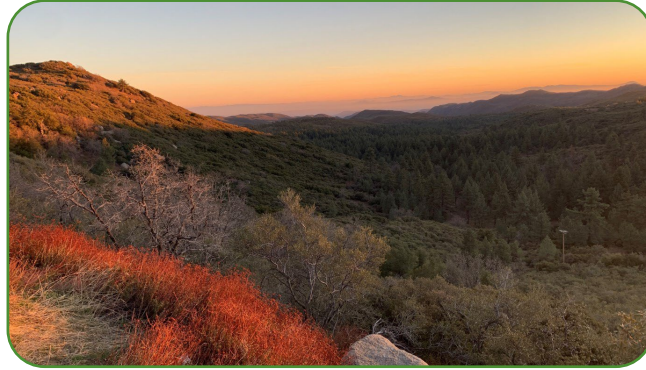
- Use of low-carbon fuels prolongs natural gas infrastructure

Low-Carbon Fuels – Example Actions



Organization

- Identify hard-to-electricity end uses and determine feasibility of using low-carbon fuels



Community

- Explore use of low-carbon fuels in hard-to-electrify sectors, like industrial



Region

- Convene a regional task force to determine feasibility of low-carbon fuel supply for building end uses

Low-Carbon Fuels Discussion

Open Discussion – Buildings



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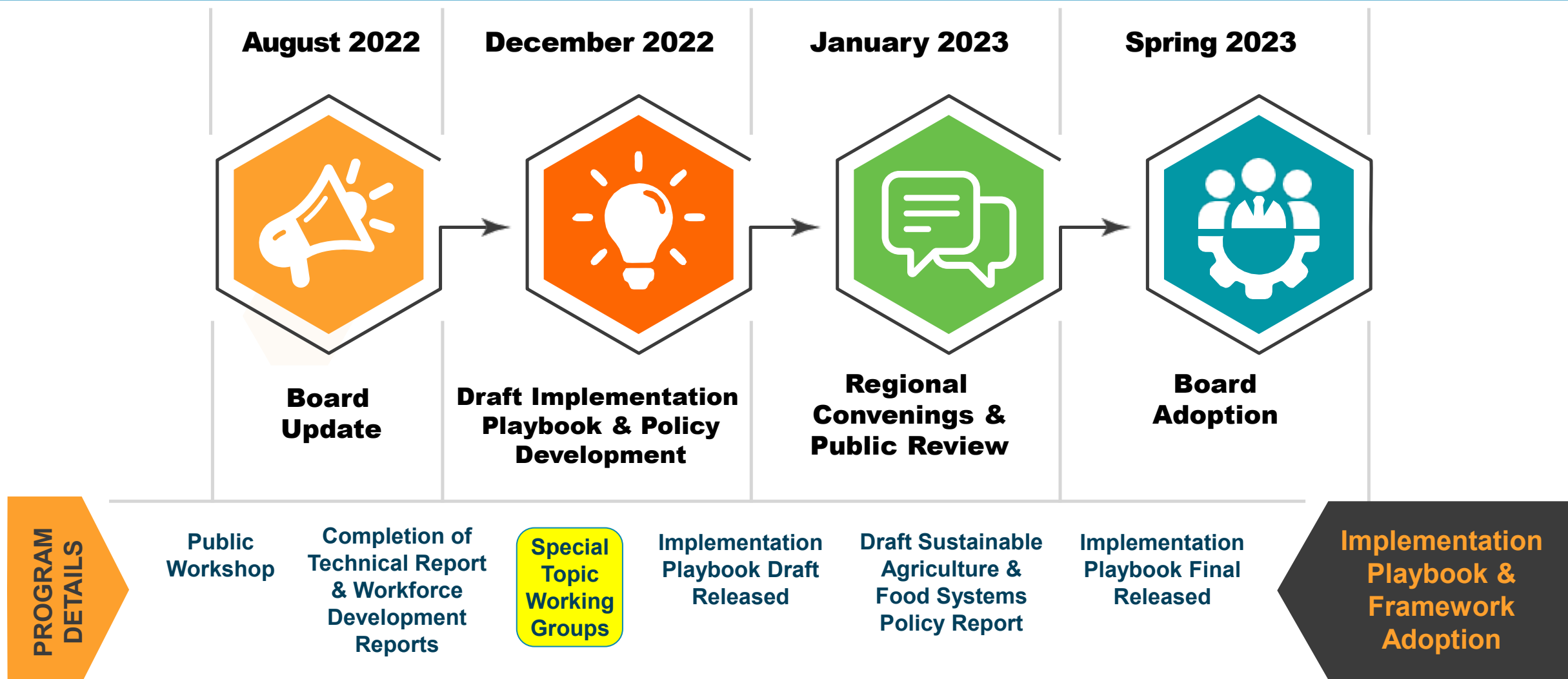
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REGIONAL DECARBONIZATION FRAMEWORK

Buildings Working Group

September 29, 2022

Additional Slides for Q + A

Timeline



Public Outreach: Fall 2022 - Spring 2023

Special Topic Working Groups



Sept – Nov 2022

Electricity
Buildings
Transportation
Land Use & Natural
Solutions
Food Systems & Circular
Economy

Regional Social Equity Working Group



Sept 2022 and
Onwards

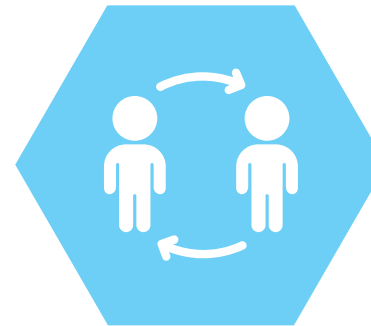
Social Equity Guidance

Public Workshops



Oct 2022
Dec 2022
Feb 2023

Regional Convenings by Supervisorial District



Jan – Feb 2023

5 supervisorial
districts

Technical Working Group



Ongoing

Experts in relevant
fields as-needed

Implementation Playbook: Examples



Buildings

- Better use of energy in existing buildings



Electricity

- Educate residents & businesses about 100% renewable energy options



Food Systems & Circular Economy

- Bulk purchase of food
- Waste diversion from landfills



Land Use & Natural Climate Solutions

- Green streets



Transportation

- Retire polluting vehicles

Regional Actions: Examples



Solar electricity for
low-income renters



Model building code
for electrification



Regional program for
suitable tree planting
locations